

Providing Information to the Water Well, Underground Injection Control (UIC) & Underground Hydrocarbon Storage (UHS) Industries in Kansas and other Partners Interested in these Operations, the Environment, Water Resources and Energy

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## KDHE Hosts Geology & Well Technology Tech Fair on October 9-10 in Wichita

On October 9-10 in Wichita, Kansas, the KDHE, Geology Section hosted the 2018 Geology & Well Technology Tech Fair.

During the fair, presenters spoke on various topics including water rights in Kansas, geomechanical studies to assess cavern stability, tunnel mapping at the U.S.- Mexico border and well control.

The Geology & Well Technology Section within the Bureau of Water administers the Underground Injection Control (UIC), the Underground Hydrocarbon Salt Cavern Storage, and Water Well Licensing, Water Well Construction and Abandonment Programs.

These programs protect public health and safety, and the environment. The UIC Program regulates injection well activities, which include the disposal of industrial wastes into deep geologic formations, the solution mining of salt formations, and the shallow injection of non- hazardous fluids below the land surface.

The Underground Hydrocarbon Salt Cavern Storage Program regulates the storage of hydrocarbons, including liquefied petroleum gas (LPG) and natural gas, in salt caverns formed by solutioning in the Hutchinson Salt.

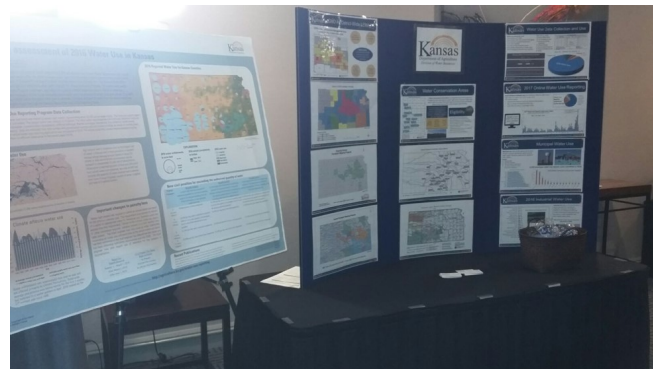
The program also regulates the brine ponds associated with the underground storage facilities.

The Water Well Program regulates water well contractor licensing, water well construction, and water well abandonment. The Geology and Well Technology Section also provides hydrogeological and technical support for other pro in the Bureau of Water. (continued on page 2, 3 & 4)



# Geology & Well Technology Tech Fair - continued

## VENDORS





## Geology & Well Technology Tech Fair - continued

### VENDORS



Speakers, vendors and attendees traveled from Canada, Louisiana, Texas, Oklahoma, Missouri, Colorado, Nebraska and Kansas.

## Vendors

- Allied Environmental Consultants, Inc.
- Baker Hughes
- BakerCorp
- Burns & McDonnell Engineering Company, Inc.
- Division of Water Resources
- ELI Wireline Services, LLC
- Empire Wireline, LLC
- GHD
- GSI Engineering
- Hydro Resources
- iBall Instruments
- Kansas Geological Survey
- KDHE Watershed Management
- Lonquist & Company LLC
- Petrotek
- Socon Sonar Well Services, Inc.
- Sonic Surveys, LTD
- Strata
- T&C Manufacturing
- Topeka Water Office
- TRE Altamira, Inc.
- UCS
- Valve & Wellhead Specialists, LLC

## Speakers

- Wayne Jenkinson, T&C Mfg.
- Charlotte Philip, Division of Water Resources
- Tracy Streeter, Kansas Water Office
- Sam Vogeli, Respec
- Cyriac Sebastian, Tre Altamira
- Rick Miller, Kansas Geological Survey
- Bhavesh Ranka, Cudd Well Control
- Joe Ratigan, Ratigan Engineering & Consulting
- Shelby Peterie, Kansas Geological Survey
- Nicholas Bell, Occidental Chemical
- Rolfe Mandel, Kansas Geological Survey

## Sponsors

- T&C Mfg. and Burns & McDonnell
- STRATA, Inc. and iBall Instruments, LLC
- Cavern Solutions, Inc.

## Geology & Well Technology Staff 2018

by Deb Biester

Geology and Well Technology Section  
(GWTS)  
Mike Cochran, Section Chief  
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October 1, 2018

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### Meet Our New Field Operations, Permitting, and Compliance Unit, Unit Chief

Hi, my name is Allie Lane and I recently joined the Bureau of Water as the new Field Operations, Permitting, and Compliance Unit Chief in the Geology and Well Technology Section. I received a B.S. in Geology from Northwest Missouri State University and an M.S. in Geology from Kansas State University. I recently graduated in August 2018 and I am excited and happy to be working in my field of interest with the KDHE. My husband is also a prospective geologist; we were recently married in September 2018. I am moving to Topeka, KS in November 2018 and I am looking forward to living in a bigger city. I am currently working towards my professional geologist license in my spare time but I also enjoy fossil and arrowhead hunting, hiking, gardening, painting and reading.

Allie was hired by KDHE as Allie Richard. By the time she started with BOW, she had gotten married and her name is now Allie Lane. Congratulations !!!

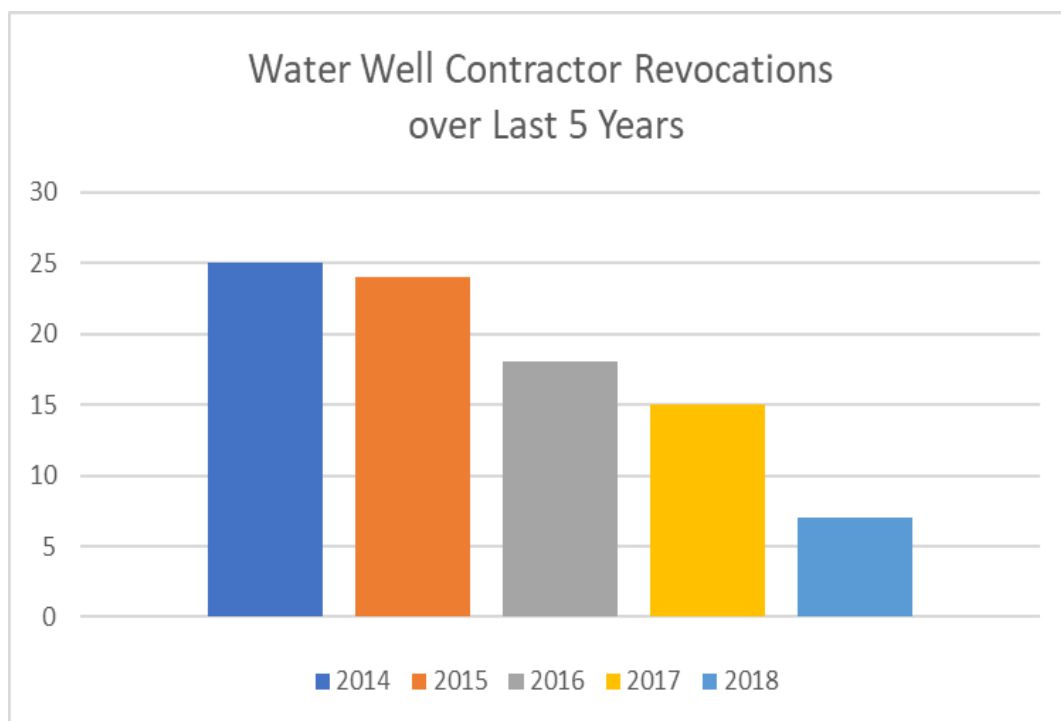
## Decline in Water Well Revocations

by Deb Biester

There was a significant decline this year in regards to the number of water well license revocations issued by KDHE. Five water well contractors voluntarily asked to be revoked due to not wanting to renew their license this year, one was short on Continuing Education Credits (CEU) and one did not respond. This was a total of seven water well contractors, who had their licenses revoked, the lowest we have had in years.

We appreciate the water well contractors for getting their water well renewal applications in on time. Another contributing factor was the efforts of Deb Biester, Public Service Administrator and Licensing, Pam Chaffee, Unit Chief, Water Well and Technical Support Unit of the KDHE Water Well Program along with Monica and Dale Hayes of the Kansas Groundwater Association who process the Continuing Education Units for KDHE. Together as a team we helped the contractors with problems that were hindering their renewal process by doing follow up emails and phone calls and working with the contractors to solve these problems.

Below, you will see a steady decline in revocations over the past five years starting with 25 in 2014 declining to 7 in 2018.



## **UIC Class I Waste Water Minimization Guidance Published**

**by Carrie Ridley, PG**

Over the past few years, Class I Operators have been facing several issues; rising static fluid levels, rising bottom hole pressures and increased seismic activity. As a result, KDHE Policy Memorandum 91-1 was revised in June 2018, to incorporate and formalize waste water minimization plans into all Class I UIC permits. Multiple benefits are possible by finding ways to reduce injected waste water; keeping water in the hydrogeologic cycle, preserves pore space for future use, reduces the potential for induced seismicity. As new repermits are issued, the following permit conditions have been added:

- A. *The permittee must record and maintain in the facility operating record, at least annually, a waste minimization program which addresses the wastes and wastewater being directed to the permitted well. The permit holder will submit to KDHE an annual report detailing the on-going waste and wastewater minimization efforts.*
- B. *The report will identify the programs and practices in place to reduce the volume of wastewater injection, a description of the administrative process and structure in place to develop and implement such a program; a description of past, current and future projects, including the results of projects. Appropriate diagrams, graphs, tables, etc. should be included in the report to describe projects and their effectiveness.*

The UIC program has created a Guidance document which outlines why KDHE is requiring this information, when Annual Reports are due, and possible strategies for implementing and creating a Waste Water Minimization plan.

Annual Waste Water Minimization reports should include but are not limited to:

- A written policy of management and corporate support for planning efforts and a commitment to implementation.
- Developing wastewater generation and injection flow process diagrams.
- Options to be evaluated and a schedule for implementation based on reduction assessment.
- System for tracking results.
- Documentation of results and efforts.

More information can be found on our website:

Revised Policy Memorandum #91-1:

[http://www.kdheks.gov/uic/download/Policy\\_91-1\\_\(UIC\).pdf](http://www.kdheks.gov/uic/download/Policy_91-1_(UIC).pdf)

Waste Water Minimization Guidance:

[http://www.kdheks.gov/uic/download/UICI-G1\\_Waste\\_Minimization\\_Guidance.pdf](http://www.kdheks.gov/uic/download/UICI-G1_Waste_Minimization_Guidance.pdf)





**Merry Christmas and Happy New Year from GWTS**



## **KDHE Contracts with Kansas Geological Survey (KGS) to Study Microseismicity in Kansas**

**by Mike Cochran, PG**

In 2018, KDHE contracted with the KGS to study microseismicity in proximity to injection wells in Kansas. The study report is titled *"Microseismic Monitoring and Analysis with Focus on Trends and Clusters in Proximity to Class I Injection Wells in Kansas"* was finalized by KGS in August 2018.

The following are what we believe are some of the significant findings of the study:

Microseismicity trends or lineaments do not appear to originate at/near and radiate outward from Class 1 wells where localized injections volumes are some of the largest in the state, as would be expected if a high volume well was the instigator of the induced seismicity events. Rather, seismicity clusters appear to migrate toward these high-volume wells and away from areas to the south where salt water injection wells collectively increased local injecting rates by an order of magnitude over a period of years starting around 2011. At this point, there appears to be little to no correlation between historical trends or changes in waste water injection rates in Class I wells and the overall change in regional trends in fluid pressure or seismicity that originated in south central Kansas.

Earthquakes likely induced from elevated Arbuckle fluid levels in southern Kansas migrated to the north and northeast away from the causal high-volume saltwater disposal wells following very different patterns and rates.

Seismicity and changes in formation pressures seem to be less dependent on changes in injection volume at local Class I injection wells than regional volumes of injected fluid. It has not been possible to correlate any single or group of operations that might be key to mitigating the increasing SFLs. Seismicity will have a stronger relationship to proximity of critically stressed faults with a conduit between permeable Arbuckle zones and minimal clamping pressures above what is necessary to overcome static friction along a rupture surface (tear along a fault plane). Work is ongoing assimilating and developing relationships between injection allotments and patterns and the dependency of seismicity trends on fluid properties within the Arbuckle. A major effort is being made to augment the Class I data provided by KDHE with voluntary and agency collected static fluid levels in Class II injection wells.

Although a large number of earthquakes, both felt events and microearthquakes, have been recorded by the KGS seismic network in many parts of the state, many of these events do not have characteristics indicative of anthropogenic origins. Sparse, low magnitude ( $M < 3$ ) seismic activity has been recorded along the Nemaha Ridge. These events typically occur as single earthquakes or brief swarms with no apparent migration pattern, likely indicating natural movement on critically stressed faults.

## **UIC Class I KOLAR Kickoff**

**by Carrie Ridley, PG**

UIC has been working closely with the Kansas Geological Survey to develop the Class I Monthly Online Reporting system in Kansas On-line Automated Reporting system (KOLAR). The goal has been set for January data (due February 28<sup>th</sup>) to be uploaded by operators. The UIC program and KGS want the transition to the online reporting system to be smooth and be advantageous for the user. During the next three months we will be working out kinks and bugs and adding users. Once you are logged into KOLAR, please review permit limits specific to each permit and test the functions of the program. If there are things you want the program to do, let us know. Please be looking out for emails regarding your KOLAR account.

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## **Water Well Contractor Licensure Exam Statistics 2017-2018 Licensure Period**

**by Pam Chaffee, PG**

During the 2017-2018 licensure period, there were 227 licensed water well contractors were licensed by KDHE. After revocations are issued, there will 220 contractors licensed as the 2018-2019 licensure period progresses.

Seventeen (17) individuals took and passed the Kansas Water Well Contractor's Licensure Exam during the 2017-2018 licensure period. Fourteen passed the exam the first time and three (3) had to retake the exam.

Since the beginning of 2018-2019 licensure period, eleven (11) individuals have taken the exam, with nine (9) passing the exam.



### **Water Well Testing**

KDHE Certified Laboratories Listing can be found at the following website:  
<http://www.kdheks.gov/envlab/disclaimer.html>



## Water Well Program Upcoming Opportunities for CEUs

by Pam Chaffee, PG

There are a number of upcoming opportunities for Kansas Water Well Contractors to get training to meet their eight (8) continuing education units (CEUs) that are required to renew their license beginning with the first full year of licensure or the renewal period. CEUs must be processed through the Kansas Ground Water Association (KGWA). Information is available on the new KGWA website at <https://kgwa.org/>. Contact Dale Hayse, KGWA Executive Director, at Hayse Management Services, P.O. Box 107, Mullinville, KS, 67109, or at 620-548-2669, or at [ksgroundwater@gmail.com](mailto:ksgroundwater@gmail.com).

The **2019 KGWA Convention and Trade Show** will be held on January 24-25, 2019 at the Kansas Star Event Center in Mulvane, KS. Industry and regulatory topics will include:

2019 NGWA McElhiney Lecturer  
Drilling Rigs & Drilling  
Geology & Aquifers  
Pumps, Tanks & Piping  
Controls & Wiring  
Kansas sales tax

Water Systems Engineering  
Regulations & Sanitation  
Casing, Gravel Pack, & Grout  
Solar Panels  
Africa Water Systems  
KDHE Programs Update

The registration form is at: <https://kgwa.org/events/>. A review and exam will be available on Wed. January 23<sup>rd</sup> for the Kansas Water Well Contractor's Licensure Examination.

The KGWA Spring Seminar & Demonstration will be held April 26, 2019. Location TBD.

**National Groundwater Association** (NGWA) regularly provides updates on upcoming groundwater events and education opportunities. Visit the following link: <https://www.ngwa.org/events-and-education/ngwa%27s-event-calendar>.

**NGWA's WellOwner.org** website lists lessons & webinars at: <http://wellowner.org/well-owner-lessons/>.

**Private Well Class** webinar, *Is My Water Safe to Drink? – Common Questions about Private Wells*, January 17, 2019 at 1 p.m. CT. Register at: <http://privatewellclass.org/safe>. Other webinars & events are listed at: <http://privatewellclass.org/calendar>.

The 2<sup>nd</sup> National Private Well Conference will be held May 21-23, 2019, in Harrisburg, PA.

The **WorldWide Drilling Resource Magazine** is available both by email and in print. Upcoming educational events are provided online in their November 2018 *E-News Flash* at <http://www.icontact-archive.com/zvi55WNmFZoWtOU2VElwX2JRgf6QRgK?w=4>.

Links to information on surrounding state groundwater association activities include:

Oklahoma: <https://www.okgroundwater.org/events>;

Colorado: <https://www.cgwa.co/events/>;

Nebraska: <http://www.nebraskawelldrillers.org/>; and

Missouri: <http://www.missouriwaterwellassociation.com/>.



# Don't get left behind...

## Jump on the

# KOLAR

## Express



### KANSAS ON-LINE AUTOMATED REPORTING

by Deb Biester and Pam Chaffee, PG

In 2009, the Kansas Department of Health and Environment (KDHE), Bureau of Water, Geology Section and the Kansas Geological Survey (KGS) began discussing the use of KOLAR for submitting water well records by Kansas licensed water well contractors. Fifty-eight contractors were registered when the first water well record (WWC-5 Form) and fee payment were submitted via KOLAR on September 12, 2011. The first water well plugging record (WWC-5P Form) was submitted via KOLAR on June 24, 2014. As of December 12, 2018, 101 contractors have registered to use KOLAR.

Only Kansas licensed water well contractors can use KOLAR and they must be registered by KDHE. Instructions for registering are available on the Water Well Program website at: <http://www.kdheks.gov/waterwell/index.html>, at the link under KOLAR, under the heading **WWC-5/WWC-5P Forms**. The link <http://kolar.kgs.ku.edu> is used to start the registration process.

To submit a record for water well construction or reconstruction, select WWC-5 Form, or to submit a plugging record select WWC-5P Form. The location of the well must first be entered as latitude and longitude coordinates in decimal degrees, and the horizontal datum (WGS84, NAD83, or NAD27), must be selected for the source of the coordinates. KOLAR then automatically completes the portions of the record that report the location of the well (county, section, township, range, and four quarter fractions). Be sure the lat/long coordinates used are correct or the well will be incorrectly located.

Once the location information is entered, then completion of the form can proceed and KOLAR provides guidance along the way. The user is warned when information is required to be entered, or is questionable or invalid. It also shows associated fields that must be completed based upon previously entered information about the well.

Any errors that would prevent submission of the form will be identified and the user can continue editing until the problems are resolved and submission can be completed. Form submission is quick and easy.

Well record reporting via KOLAR requires online payment by credit card. Payment fees are \$7.00 for the first well construction record and \$6.50 for each additional record when several are submitted together. Conventional filing of water well records requires \$5.00 fee payment for each well construction record and expenses for mailing (postage and envelope). Remember - record fee payment is only required for new well construction. There is no charge for records reporting reconstruction or plugging of water wells.

Questions and requests for assistance in using KOLAR can be submitted to Pam Chaffee or Deb Biester at KDHE, or to the KGS KOLAR staff by using the Help tab.

**SO ALL ABOARD...CLICK TODAY...**

**AND SIMPLY YOUR LIFE**



Instructions for registering to use KOLAR and how to use it are provided at:

[http://www.kdheks.gov/waterwell/download/KOLAR Instructions by Kurt Look KGS 1-19-2012.pdf](http://www.kdheks.gov/waterwell/download/KOLAR%20Instructions%20by%20Kurt%20Look%20KGS%201-19-2012.pdf)

Questions: Call Pam Chaffee at 785-296-3565 or Deb Biester at 785-296-5524

## Attention Focuses on Private Water Wells by Pam Chaffee, PG

Millions of households (thousands in Kansas) rely on private wells for their drinking water. Protection of private wells does not fall under the authority of the Safe Drinking Water Act (SDWA), so the U.S. EPA does not regulate these wells, as it does public water supplies, nor does it provide recommended criteria or standards for individual wells. While most states now regulate the design and construction of private water wells, ensuring the safety of the water from these wells is primarily the responsibility of the well owner.

The vulnerability of drinking water systems, particularly individual water wells and small water systems, began to be identified through working relationships between federal, state, and local health and environmental agencies, and universities. Programs such as EPA's Individual Well Program, the Centers for Disease Control & Prevention's (CDC's) Private Well Initiative, and Water Systems Council's (WSC's) wellcare® Hotline, were created to focus on ensuring the safety of private well systems by partnering with state & federal agencies and nongovernmental organizations (NGOs), in an effort to make data, information, and knowledge available on the current status and conditions of private wells and other nonregulated drinking water sources (UDWS), and to organize and promote information and knowledge about interventions and approaches to address private well and UDWS concerns.

These and other program efforts have resulted in written materials, and online and in-person methods to boost knowledge and competency of the individual well owner as well as dedicated environmental health, cooperative extension, and water well professionals serving well owners daily. Some examples of these efforts are available at the following websites:

- [WellOwner.org](http://WellOwner.org) (National Groundwater Association (NGWA));
- [PrivateWellClass.org](http://PrivateWellClass.org) (Rural Community Assistance Partnership (RCAP) in collaboration with Illinois State Water Survey); and
- Water Well Trust and wellcare® Program (Water Systems Council (WSC) at [watersystemscouncil.org/](http://watersystemscouncil.org/)).

Recently collaborations among these agencies and groups have resulted in the:

- Increased funding of the U.S. Department of Agriculture's Household Water Well Program in the 2018 Farm Bill to fund qualified non-profit organizations with experience providing technical assistance helping rural communities and homeowners manage, use, and protect groundwater resources for drinking water and agricultural purposes – the result of efforts between NGWA and RCAP;
- a 5-yr MOU between WSC and the NGWA to provide a foundation for collaboration on future joint projects and initiatives;
- merging of NGWA's Foundation for Groundwater and the Groundwater Foundation will create a hub of information and charitable outreach for groundwater professionals and the public.

In late 2015, a grant from the Kansas Health Foundation was awarded to the KU School of Medicine-Wichita for conducting an in-depth collection and analysis of existing policies impacting the water quality of private water wells in Kansas municipalities, identify promising practices for protecting and improving the water quality of existing private wells, and provide recommendations for policy interventions to improve and protect the water quality of private wells at the municipal and state level. Several recommendations for nonpublic household water wells were proposed in October 2018.

In November 2018, the Kansas Department of Health and Environment, rolled out its Well Water Aware Campaign and website (<http://www.kdheks.gov/wellwateraware/index.htm>) to assist private well owners and users statewide with useful information on private water well topics, and interactive maps for locating nearby water testing labs, licensed water well contractors, and environmental threats.



## KDHE OFFICES WILL BE CLOSED ON THE FOLLOWING DAYS...

December 24, 2018	Christmas Eve
December 25, 2018	Christmas Day
January 1, 2019	New Years Day

2019

Happy  
New Year



## Web News

The following changes have recently been made to the Geology and Well Technology Section Web site:

**Geology** (<http://kdheks.gov/geo>)  
 Updated Index Page  
 Updated Organizational Chart

**UHS** (<http://kdheks.gov/uhs>)  
 Updated Index Page  
 Revised MIT Form

**UIC** (<http://kdheks.gov/uic>)  
 Updated Index Page

**Water Well** (<http://kdheks.gov/waterwell>)  
 Updated Index Page  
 Flush Mount Well Construction Detail  
 WWC-1 Application for WW Contractor License  
 WWC-2 Character and Experience Reference Questionnaire  
 WWP-9 Procedure for Obtaining a Kansas Water Well Contractors License  
 WWP-10 Procedure for Plugging a Groundwater Monitoring Well

## Did You Know... ???

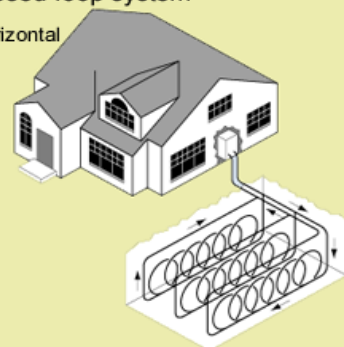
### Geothermal heat pumps are energy efficient and cost effective

According to the U.S. Environmental Protection Agency (EPA), geothermal heat pumps are the most energy-efficient, environmentally clean, and cost-effective systems for heating and cooling buildings. All types of buildings, including homes, office buildings, schools, and hospitals, can use geothermal heat pumps.

#### A type of geothermal heat pump system

##### Closed-loop system

Horizontal





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## **UNDERGROUND NEWS**

**Kansas Department of  
Health and Environment**

**Prepared & Distributed by  
Bureau of Water - Geology & Well Technology Section**

**Direct inquiries and opinions to:  
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Topeka, KS 66612-1367**

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**MEMBER:**



***KDHE's Mission is to Protect and Improve the  
Health and Environment of all Kansans***